

Dimensional reduction of a quality of life questionnaire: is confirmatory factor analysis a powerful tool?

N. Dardenne¹, AL. Poirrier², C. De Dorlodot³, AF. Donneau¹

¹ Public Health Department, Biostatistics, University of Liege, Liege, Belgium

²ENT Department, University Hospital of Liege, Liege, Belgium

³ENT Department, UCL University Hospital of Namur, Namur, Belgium

Introduction: Most of quality of life questionnaires (QOLQ) consist of subdomain structures that are explored or clinically identified but not systematically statistically validated. However, validation is required to compare results from various studies. The aim of this study was to evaluate the ability for confirmatory factor analysis (CFA) to validate several models of a specific QOLQ. Their discriminant power was then assessed for distinct groups of patients.

Methods: A total of 383 patients with rhinological complaints were recruited in 3 Belgian rhinology clinics. The 22-item Sino-Nasal Outcome Test (SNOT-22) was measured for each patient divided into 3 groups: medical condition, nose or sinus surgery. Exploratory factor analysis was first performed to determine SNOT-22 subdomain structure using polychoric correlation and PROMAX rotation. CFA was then carried out to validate the explored, a previous validated and a commonly accepted model using the weighted least squares means and variance estimator. Their fit was compared using root mean square error of approximation (RMSEA), comparative fit index (CFI), standardized root mean square residual (SRMR) and Tucker-Lewis index (TLI). The discriminant power of each model was then studied using quadratic discriminant analysis with 2-fold cross validation.

Results: Despite different number of factors, models had similar subdomain structures and showed adequate fit with CFI values between 0.98 and 0.99, TLI between 0.97 and 0.99, RMSEA between 0.052 and 0.10 and SRMR between 0.058 and 0.086. The percentage of well-classified patients ranged between 52% and 54% with highest percentages in the sinus surgery group (between 74.4% and 79.5%) and lowest in the medical condition group (between 6.4% and 12.2%).

Conclusion: CFA failed to highlight only one model with a good fit and they all presented a low discriminant power. Future investigations should be made to take into account the effect of potential confounding factors.

Characters: 1999 (max 2000)